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- zur Hausen H. Papillomaviruses as carcinomaviruses. In: Klein G, ed. *Advances in Viral Oncology*. New York: Raven Press, 1989:1-26.
- Hawley Nelson P, Voutsden KH, Hubbert NL, Lowy DR, Schiller JT. HPV16 E6 and E7 proteins cooperate to immortalise human foreskin keratinocytes. *EMBO J* 1989;8:3905-10.
- Evander M, Edlund K, Boden E, et al. Comparison of a one-step and a two-step polymerase chain reaction with degenerate general primers in a population-based study of human papillomavirus infection in young Swedish women. *J Clin Microbiol* 1992;30:987-92.
- Pao CC, Lin SS, Lin CY, Maa JS, Lai CH, Hsieh TT. Identification of Human Papillomavirus DNA sequences in peripheral blood mononuclear cells. *Hematopathology and Laboratory Hematology* 1990;95:540-6.
- Miller SA, Dykes DD, Polesky HF. A simple salting out procedure for extracting DNA from human nucleated cells. *Nucleic Acid Res* 1988;16:1215-8.

Ciprofloxacin resistant gonococci arriving from Thailand

In an attempt to overcome the increasing isolation of penicillin resistant gonococci (both chromosomal and plasmid-mediated), some genitourinary medicine clinics in London now use single-dose oral ciprofloxacin as first-line therapy. This is in line with the World Health Organisation's 1989 recommendations.¹ Ciprofloxacin has the advantage of costing less than spectinomycin or third-generation cephalosporins. Unfortunately, there have been recent reports of resistance to ciprofloxacin with associated clinical treatment failures in London.²

We report a 36 year old lorry driver who presented with uncomplicated gonococcal urethritis having just returned from a two week holiday in Thailand where he admitted to having unprotected sexual intercourse with a Thai female. He had not received antibiotics in the previous three months. Staining of his purulent urethral discharge demonstrated Gram negative intracellular diplococci. He was treated empirically with spectinomycin 2 g i.m. and was cured both clinically and microbiologically.

Neisseria gonorrhoeae isolated from the pus at 48 hours exhibited low-level resistance to penicillin (MIC 0.5 mg/l, β -lactamase negative), resistance to tetracycline (MIC 4 mg/l) and decreased susceptibility to ciprofloxacin (MIC 0.25 mg/l). The isolate was fully sensitive to cefotaxime (0.015 mg/l) and spectinomycin (32 mg/l). A growth requirement for proline and expression of the protein 1B-2

serovar were demonstrated by conventional typing.

There is an increasing trend to use oral rather than parenteral treatment for uncomplicated gonococcal infection, hence the current popularity of ciprofloxacin. Taking an accurate travel history from patients with gonorrhoea is crucial in deciding which is the most appropriate first-line agent to prescribe in order to minimise the risk of treatment failure. Gonococci with markedly reduced susceptibility to ciprofloxacin (MIC ≥ 2 mg/l) have been reported in studies from South-East Asia. One study from the Philippines reported a MIC₉₀ for ciprofloxacin of 0.25 mg/l³ and another in Thailand reported 0.3% of gonococcal isolates to have a ciprofloxacin MIC ≥ 2 mg/l.⁴ Gonorrhoea treatment failures have been associated with ciprofloxacin MICs exceeding 0.12 mg/l.² In Thailand, a recent study showed 9% of gonococci to be spectinomycin resistant (MIC ≥ 128 mg/l) whereas 100% of isolates were susceptible to cefotaxime.⁴ Worldwide, resistance to broad-spectrum cephalosporins is rare. Despite the success with spectinomycin in our patient, it would be more logical for patients acquiring gonorrhoea in South-East Asia to be treated empirically with single-dose therapy using a third generation cephalosporin such as ceftriaxone (i.m.), cefotaxime (i.m.) or cefixime (oral). Spectinomycin and ciprofloxacin may be more appropriate as second-line agents. There is a need for continued antibiotic susceptibility surveillance of *N. gonorrhoeae* isolates originating from the tropics in order to prevent dissemination of multi-resistant gonococci into the United Kingdom.

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- STD treatment strategies. WHO consultation on development of sexually transmitted disease treatment strategies. 1989 WHO/VDT/89.477
- Gransden WF, Warren CA, Phillips I, Hodges M, Barlow D. Decreased susceptibility of *Neisseria gonorrhoeae* to ciprofloxacin. *Lancet* 1990;1:51.
- Clendennen TE, Hames CS, Kees ES, Price FC, Rueppel WJ, Andrada AB, Espinosa GE, Kabreria G, Wignall FS. In vitro antibiotic susceptibilities of *Neisseria gonorrhoeae* isolates in the Philippines. *Antimicrob Agents Chemother* 1992;36:277-82.
- Clendennen TE, Echeverria P, Saengur S, Kees ES, Boslego JW, Wignall FS. Antibiotic susceptibility survey of *Neisseria gonorrhoeae* in Thailand. *Antimicrob Agent Chemother* 1992;36:1682-7.

Suitability of *Neisseria gonorrhoeae* lipooligosaccharides for epidemiological studies

Although the lipooligosaccharides (LOSs) of *N. gonorrhoeae* are multicomponent and display considerable interstrain heterogeneity,¹ the components of the LOSs of individual *N. gonorrhoeae* strains have been shown to